

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-47

Name: Sorum Lake

County: Perkins

Legal description: Sec. 16, Twn. 17 N, R 10 E

Location from nearest town: 1 mile east and 1 mile south of Sorum, SD

Dates of present survey: July 7-9, September 2, 2014

Date last surveyed: July 11-13, September 27, 2011

Management classification: Warmwater permanent

Primary Species (game and forage):

1. Largemouth bass

2. Walleve

3. Yellow perch

4. Black crappie

Secondary and other species:

1. Black bullhead

2. Green sunfish

3. Golden shiner

4. _____

PHYSICAL CHARACTERISTICS

Surface Area: 88 acres:

Watershed: 54.000 acres

Maximum depth: 17 feet;

Mean depth: 5.5 feet

Lake elevation at survey (from known benchmark): full

Ownership of lake and adjacent lakeshore property:

Sorum Lake is a state owned dam and the South Dakota Department of Game, Fish and Parks manages the fishery. The terrestrial area around the lake and dam is managed as a Game Production Area (GPA).

Fishing Access

Shoreline access at Sorum Lake can be difficult with either heavy vegetation or steep cut banks inhibiting shore anglers. The boat ramp is a degrading plank boat ramp that is narrow and very rough. The dam grade and boat ramp provide the best access to the water's edge and are popular places for shore angling.

Observations of Water Quality and Aquatic Vegetative

Rooted aquatic vegetation consists of bulrushes and cattails. The vegetation covers approximately 75% of the shoreline throughout the summer. Submerged vegetation is excessive from mid summer until freeze up in water depths under 5 feet.

Observations on condition of structures (i.e. spillway, boat ramps and docks, roads, etc)

The dam is seeping and the boat ramp is in poor condition. The road into the lake has recently been graveled.

BIOLOGICAL DATA

Sampling Effort and Catch

Trap nets and gill nets were used on July 7-9, 2014 to index adult fish populations in the reservoir (Figure 1). The net sampling consisted of eight trap net nights and two gill net nights and catch data is displayed in Tables 1 and 2. Fall electrofishing was completed on September 2, 2014, to sample the largemouth bass and walleye populations and catch data results are in Table 3. Discussion on selected fish species follows and completes this report.

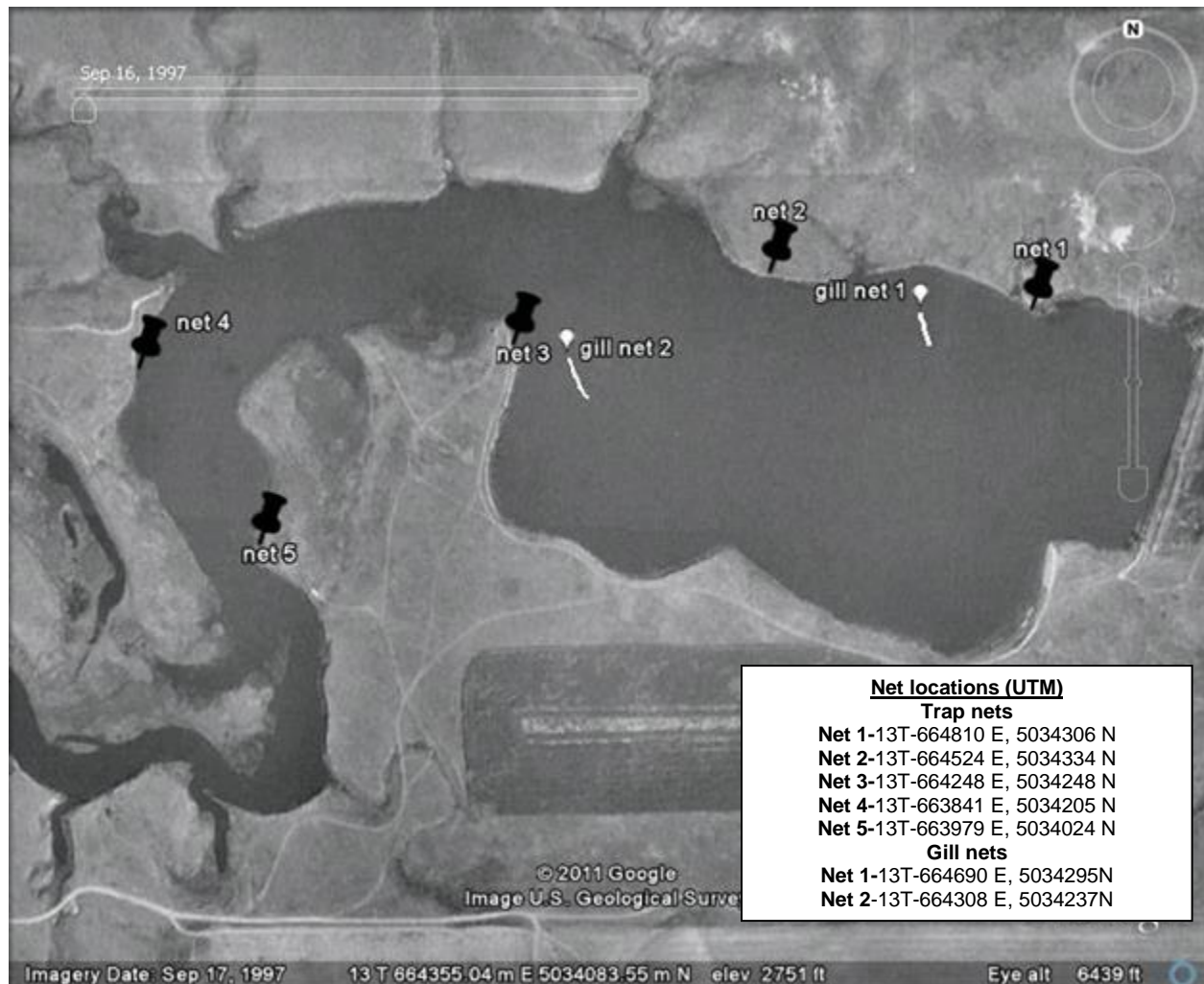


Figure 1. Locations of experimental gill nets and trap (modified fyke) nets during the lake survey at Sorum Lake, Perkins County, South Dakota, 2014

Table 1. Catch data from all species collected in eight trap nets in Sorum Lake, Perkins County, July 7-9, 2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥ S
Black bullhead	289	36.1 (13.5)	36.1 (13.5)	94 (3)	0	87.8 (1.8)
Black crappie	200	25.0 (7.9)	25.0 (7.9)	80 (5)	0	108.5 (1.1)
Golden shiner	8	1.0 (1.1)	1.0 (1.1)	--	--	--
Green sunfish	16	2.0 (1.0)	2.0 (1.0)	44 (23)	6 (11)	97.7 (3.8)
Largemouth bass	1	0.1 (0.2)	0.1 (0.2)	--	--	101.3 (--)
Walleye	1	0.1 (0.2)	0.1 (0.2)	--	--	87.1 (--)
Yellow perch	417	52.1 (21.2)	52.1 (21.2)	86 (3)	0	86.5 (1.8)

Table 2. Catch data from all species collected in two gill nets in Sorum Lake, Perkins County, July 7-9, 2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥ S
Black bullhead	18	9.0 (27.7)	9.0 (27.7)	50 (21)	0	108.4 (2.4)
Yellow perch	71	35.5 (4.6)	35.5 (4.6)	68 (10)	0	92.9 (1.1)

Table 3. Catch data for largemouth bass and walleye collected from 50 minutes of electrofishing in Sorum Lake, Perkins County, September 2, 2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* ≥ S values with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥ S
Largemouth bass	7	10.8 (7.9)	10.8 (7.9)	78 (28)	0	126.5 (4.5)
Walleye	2	2.4 (2.3)	2.4 (2.3)	--	--	96.1 (--)

Black bullhead

Black bullheads may have entered the lake from higher in the watershed as none were stocked by the Game, Fish and Parks after the lake refilled in 2009. Black bullhead density appears to be reaching a more steady state since 2012 when CPUE was 21.4 (Table 4). This year CPUE was 36.1 (Table 1). Size structure has increased with a PSD of 94 compared to a recent high of 9 from the 2012 survey. The length frequency shows most fish in the 230-250 mm range (Figure 2).

Table 4. Composite listing of data for black bullhead collected by trap nets in Sorum Lake, 2010-2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Year	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥ S
2010	259	51.8 (17.2)	33.6 (8.9)	8 (3)	0	107.4 (6.6)
2011	839	209.8 (240.8)	209.8 (240.8)	5 (2)	0	90.9 (2.9)
2012	107	21.4 (32.8)	21.4 (32.8)	9 (5)	0	85.4 (1.8)
2014	289	36.1 (13.5)	36.1 (13.5)	94 (3)	0	87.8 (1.8)

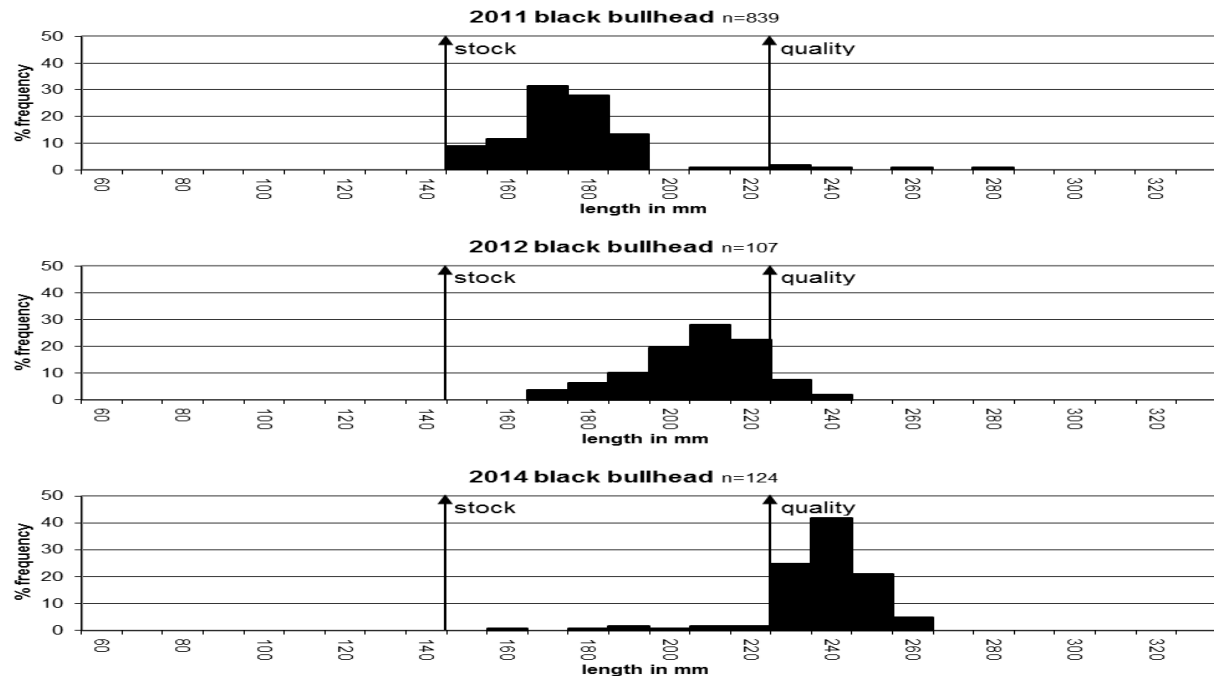


Figure 1. Length frequency histogram for black bullheads from trap nets in Sorum Dam, Perkins County, 2011-2012, 2014.

Black crappie

Two hundred adult black crappies were stocked in the summer of 2009. It appears they have done well as trap net CPUE was 25.0 (Table 1). Size structure was good with a PSD of 80. The length frequency histogram shows most fish were between 190 to 240 mm (Figure 2). In 2012, CPUE was 18.6 with a PSD of 65.

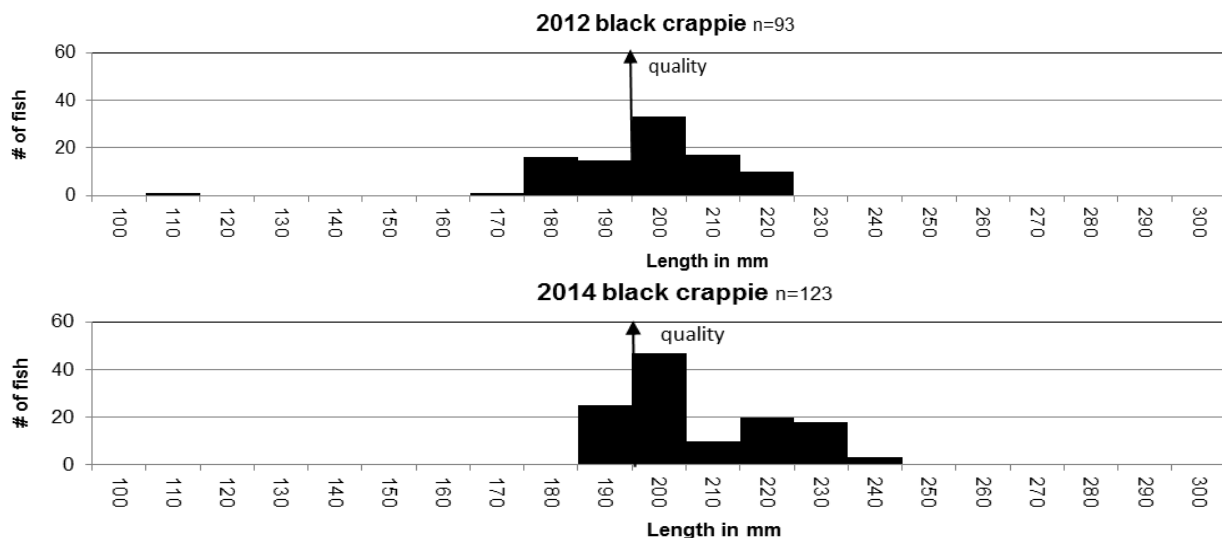


Figure 2. Length frequency histogram for black crappie from trap nets in Sorum Lake, Perkins County, 2012 and 2014.

Largemouth bass

Largemouth bass were last surveyed in Sorum Lake during fall of 2011 and a CPUE of 32.9 was recorded. Since then, water levels dropped to low levels but rose again in summer of 2014. It appears the low water may have affected density as the 2014 survey yielded a CPUE of only 10.8, however they were in excellent condition with a $Wr>S$ of 126.5 (Table 3). Few smaller fish were collected with most of the bass over 300 mm (quality) in length (Figure 3).

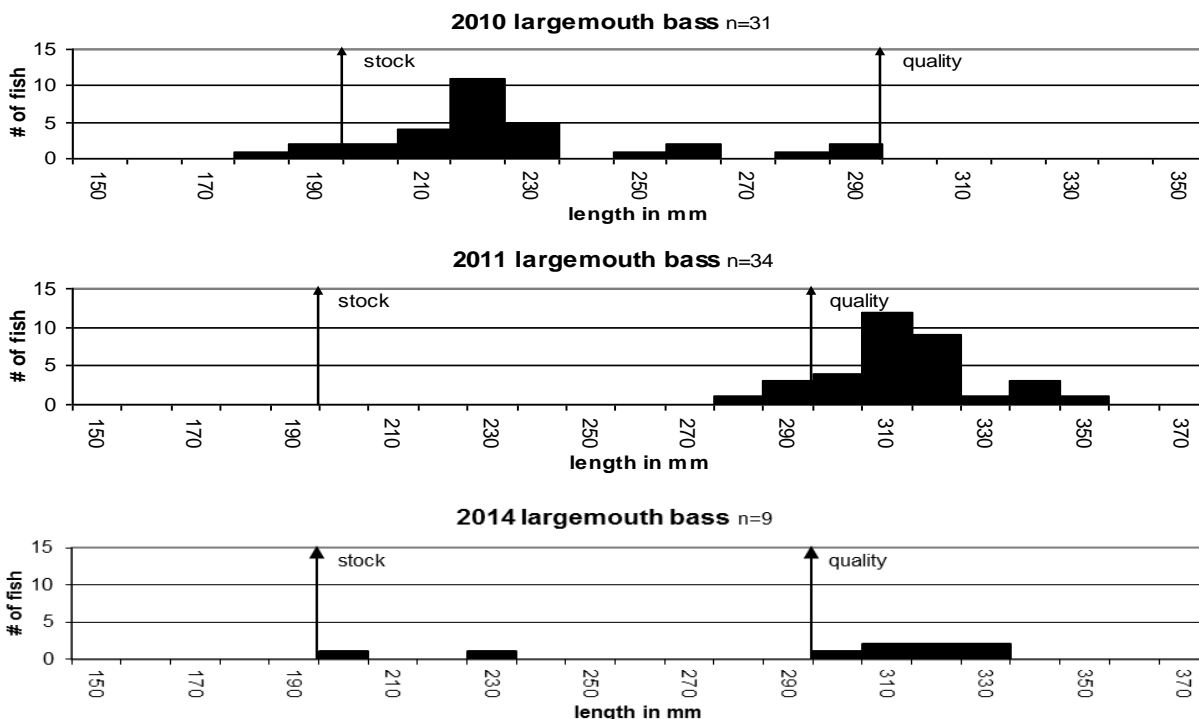


Figure 3. Length frequency histogram for largemouth bass from electrofishing in Sorum Dam, Perkins County, 2010-2011, 2014.

Walleye

Walleye numbers are following the same trend as the largemouth bass. In 2012, gill net CPUE was 2.0 and trap net CPUE was 5.4. This year none were collected in the gill nets and CPUE for trap nets was 0.1 (Table 2). During fall electrofishing two adult walleye in the 445 mm range were captured (Table 3). Due to the low abundance of walleye in all the gear types, a stocking of 1,593 large fingerlings was made in the fall of 2014.

Yellow Perch

Yellow perch numbers have decreased since 2012 when gill net CPUE was 121.0 (Table 5). This year CPUE was 35.5. Stock indices remained similar with a PSD of 68 compared to 62 in 2012. Length frequency and age data show fish are all from a 2009 year class (Table 6 and Figure 4), which is the first year after the drought that yellow perch were restocked into the lake. No recruitment is evident at this time.

Table 5. Composite listing of data for yellow perch collected by gill nets in Sorum Lake, 2010-2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Year	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥S
2010	360	180.0 (126.2)	131.0 (92.3)	1 (1)	0	108.1 (2.1)
2011	89	44.5 (66.2)	44.5 (66.2)	22 (8)	1 (2)	94.3 (1.2)
2012	242	121.0 (123.1)	121.0 (123.1)	62 (--)	0	95.5 (1.2)
2014	71	35.5 (4.6)	35.5 (4.6)	68 (10)	0	92.9 (1.1)

Table 6. Sorum Lake yellow perch length range and weighted mean length (mm) at capture by otolith ages from gill net sample July 7-9, 2014.

Age	Minimum length range @ capture	Weighted mean length @ capture	Maximum length range @ capture	Number of fish in survey
5	185	208	232	71

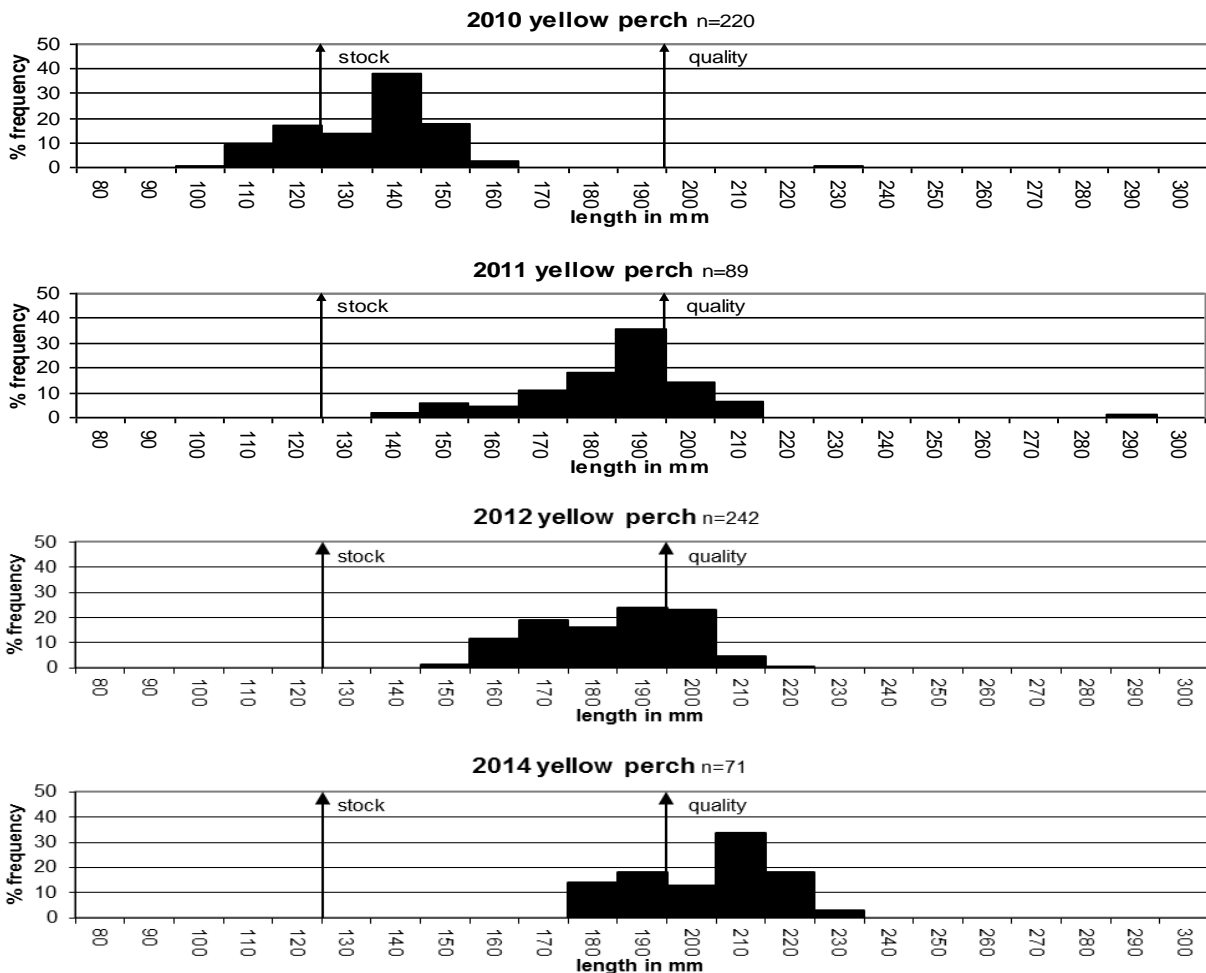


Figure 4. Length frequency histogram for yellow perch collected in gill nets at Sorum Dam, Perkins County, 2010-2012, 2014.

RECOMMENDATIONS

1. Resurvey in 2015 to check all fish populations and success of recent stockings.
2. Continue conducting netting surveys annually or biennially to monitor yellow perch and other fish populations.
3. Stock largemouth bass and walleye when available to increase predator numbers and reduce panfish densities.

APPENDICES

Appendix A. Stocking record for Sorum Dam, Perkins County, 2009-2014.

Year	Number	Species	Size
During 2004 to 2008 Sorum Dam was dry or too low to support a fishery			
2009	550	Yellow perch	Adult
	200	Black crappie	Adult
	43,800	Walleye	Fingerling
	7,320	Largemouth bass	Fingerling
2010	490	Yellow perch	Adult
	250	Golden shiner	Adult
	9,000	Walleye	Fingerling
2011		No fish stocked	
2012	20,150	Largemouth bass	Fingerling
	240	Largemouth bass	Adult
2013		No fish stocked	
2014	1,593	Walleye	Large fingerling